

## *Cantherhines longicaudus*, A New Filefish from Oceania, with a Review of the Species of the *C. fronticinctus* Complex<sup>1</sup>

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THE MONACANTHID FISH GENUS *Cantherhines* Swainson was reviewed by Randall (1964), who distinguished it from the monotypic *Amanes* Gray and recognized 11 species in the genus from the tropical and subtropical Indian, Pacific, and Atlantic oceans. Hutchins (1977) removed one of these, *longipinnis* (Fraser-Brunner), to his new genus *Cantheschenia* and placed *melanoides* (Ogilby), known from only the small holotype from Queensland, in the synonymy of *Cantherhines pardalis* (Rüppell). Recent studies (Hutchins) have shown that still another species, *C. multilineatus* (Tanaka), should be shifted from *Cantherhines* to *Thamnaconus* Smith.

The remaining eight species of *Cantherhines* form three natural groups. The first, which consists of the western Atlantic *macrocerus* (Hollard) and the Indo-Pacific *dumerilii* (Hollard), is characterized by two pairs of spines on the side of the caudal peduncle and relatively large size (more than 300 mm SL). The second group includes *sandwichiensis* (Quoy and Gaimard) from the Hawaiian Islands, *pardalis* (Rüppell) from the Indo-Pacific except Hawaii, and *pullus* (Ranzani) from the Atlantic; these three species lack spines on the caudal peduncle, are smaller in size, and possess a short caudal fin. The third group includes the Indo-West Pacific *fronticinctus* (Günther), the Hawaiian *verecundus* E. K. Jordan, and the Easter Island *rapanui* (De Buen) [*C. tiki* Randall was shown by

Caldwell and Randall (1967) to be a junior synonym of *rapanui* De Buen]; these three filefishes lack caudal peduncular spines, are small to moderate in size, and have a relatively long caudal fin. In the present paper we will review the fishes of this third group, which we shall term the "*fronticinctus* complex," and add to it a new species, *C. longicaudus*, from the Society Islands and Cook Islands.

### METHODS

Counts and measurements were made following Hutchins (1977). However, the terminology used here differs with reference to the structure representing the rudimentary pelvic fin located at or near the end of the pelvis in most monacanthids. The "pelvic bony structure" of Hutchins is replaced by "pelvic fin rudiment." The length recorded for specimens is standard length (SL).

The following abbreviations for institutions are used: AMS, Australian Museum, Sydney; BC, University of British Columbia, Vancouver; BPBM, Bernice P. Bishop Museum, Honolulu; LACM, Natural History Museum of Los Angeles County, Los Angeles; RUSI, J. L. B. Smith Institute of Ichthyology, Rhodes University, Grahamstown; UH, Department of Zoology, University of Hawaii, Honolulu; USNM, U.S. National Museum of Natural History, Washington, D.C.; WAM, Western Australian Museum, Perth.

Counts of the soft dorsal and anal fin rays are given in Table 1. These include the counts from Randall (1964) and the specimens listed herein for each species.

In the description of the new species, data in parentheses refer to the paratype. Proportional measurements of the two type specimens are given in Table 2.

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TABLE 1  
FIN-RAY COUNTS OF SPECIES OF THE *Cantherhines fronticinctus* COMPLEX

	SOFT DORSAL RAYS					ANAL RAYS					PECTORAL RAYS *			
	33	34	35	36	37	30	31	32	33	34	11	12	13	14
<i>fronticinctus</i>	3	3	9	2			8	9				4	12	1
<i>longicaudus</i>			1	1			1		1			2		
<i>verecundus</i>	2	13	11	9		1	16	18				10	25	
<i>rapanui</i>			6	9	3		3	7	7	1	1	15	2	

\*Counts do not include the rudimentary upper ray.

KEY TO THE FILEFISHES OF THE *Cantherhines fronticinctus* COMPLEX

1. a. First dorsal spine relatively long, 1.1–1.4 in head length; a patch of fine bristles on side of caudal peduncle in adult males; interorbital space usually crossed by two prominent dark-brown bands (East Africa to western Pacific) . . . . . *Cantherhines fronticinctus*
- b. First dorsal spine shorter, 1.5–2.3 in head length; no bristles on side of caudal peduncle; interorbital space crossed by two faint-brown bands, never prominent . . . . . 2
2. a. Caudal fin long, 0.9–1.1 in head length; fresh ground color generally dull yellow (Society Islands and Cook Islands) . . . . . *Cantherhines longicaudus* n. sp.
- b. Caudal fin shorter, 1.1–1.3 in head length; fresh ground color generally gray or greenish brown . . . . . 3
3. a. First dorsal spine of medium length, 1.5–1.7 in head length; maximum size of known specimens 114 mm SL; fresh ground color gray (Hawaiian Islands) . . . . . *Cantherhines verecundus*
- b. First dorsal spine relatively short, 1.8–2.3 in head length; maximum size of known specimens 158 mm SL; fresh ground color usually brown to greenish brown (Easter Island) . . . . . *Cantherhines rapanui*

*Cantherhines fronticinctus* Günther

Figures 1, 2

*Monacanthus fronticinctus* Playfair and Günther, 1867, p. 136, pl. 19 (type locality, Zanzibar).

DIAGNOSIS: A species of *Cantherhines* separable from all other monacanthids by the following combination of characters: soft dorsal fin rays 33–36; anal fin rays 31–32; pectoral fin rays 12–14 (usually 13); gill rakers 29–37; vertebrae 7 + 12; head length 2.7–3.2 in SL; snout length 3.3–3.7 in SL; first dorsal spine relatively long, its length 1.1–1.4 in head length, originating over anterior half of eye, and folding into a moderately deep groove in back when depressed; dorsal spine covered by small asperities and a row of very small barbs

along each posterolateral edge; second dorsal and anal fins not elevated anteriorly, about equal in height; longest soft dorsal ray (fifth to eighth) 2.7–3.3 in head length; caudal fin relatively long, its length 1.3–1.6 in head length, the posterior border rounded; pelvic fin rudiment small, 3.2–4.1 in orbit diameter, consisting of three pairs of incising scales fused to rear end of pelvis; scales on body small, each with rows of minute slender spinules which give the skin a velvety texture; an elongate patch of fine bristles on each side of caudal peduncle of adult males.

Color when fresh (based on color transparencies of specimens from Western Australia, Seychelles, Philippines, and Okinawa): yellowish brown, usually with five darker body stripes, each enclosing a row of dark-

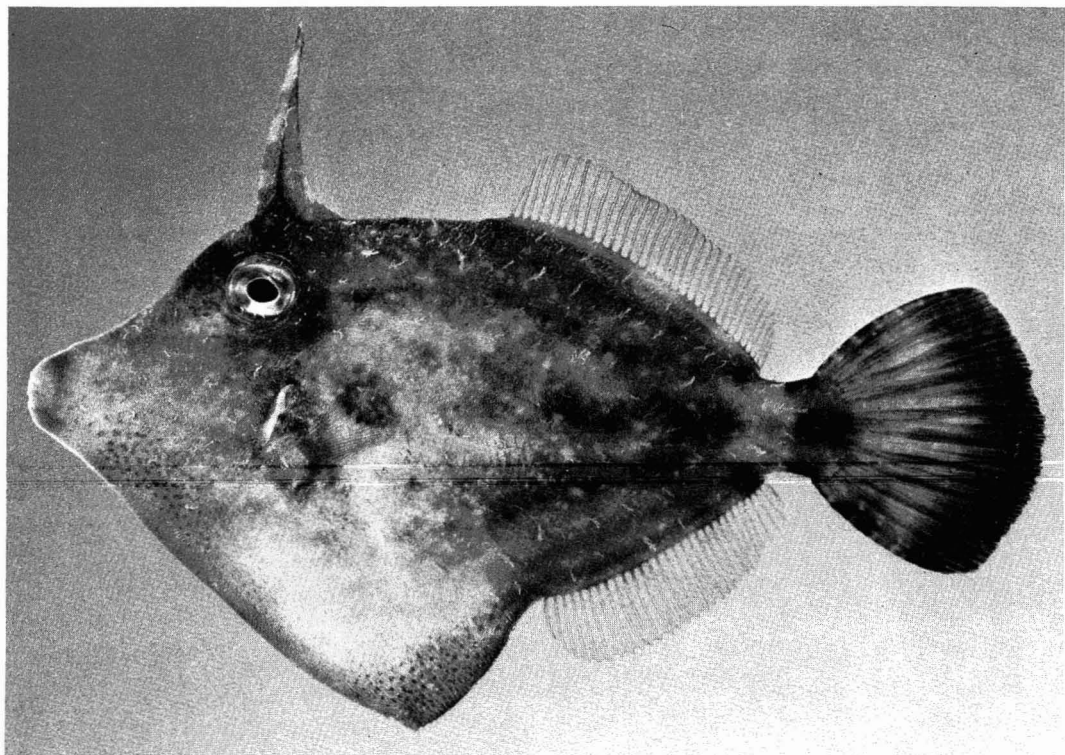


FIGURE 1. *Cantherhines fronticinctus*; 77 mm SL; BPBM 22322; Okinawa, Ryukyu Islands.

brown spots; a brown blotch somewhat larger than eye near tip of pectoral fin; bases of soft dorsal and anal fins each with three brown saddles, the posteriormost darkest; a pale ring encircling anterior half of caudal peduncle, the posterior half either dark brown or with short continuations of the three body stripes; a broad dark-brown band joining anterior margin of each eye across interorbital, a second narrower band crossing posterior interorbital space at base of first dorsal spine; a dark-brown spot behind eye (first of series of dark-brown spots of second brown stripe of body); a dark-brown blotch below eye; an iridescent blue line nearly surrounding eye, the discontinuity below nostrils where the two ends of the circle form a short acute projection passing ventroanteriorly from eye; a patch of blue wavy lines or short irregular spots in a broad region anterior to gill opening which continues toward lower jaw (on some speci-

mens short irregular blue lines and spots extend onto ventral surface of pelvic flap); first dorsal spine yellowish brown with four or five darker cross bands (bands sometimes indistinct); soft dorsal, anal, and pectoral fin rays pale brown, membranes hyaline; caudal fin yellowish with two broad curved cross bands, the posterior one on distal third of fin usually very dark to almost black, the anterior one faint, usually restricted to dark blotches on upper and lower fin margins.

In life, *Cantherhines fronticinctus* is similar to the fresh coloration as given above, with the following exceptions: the ground color may vary from dark brown through yellowish brown to greenish; the pale band encircling anterior part of caudal peduncle is white to yellowish green (the most conspicuous marking underwater); a large triangular dark-brown blotch encloses both pectoral fin base and gill opening, its apex just touching the

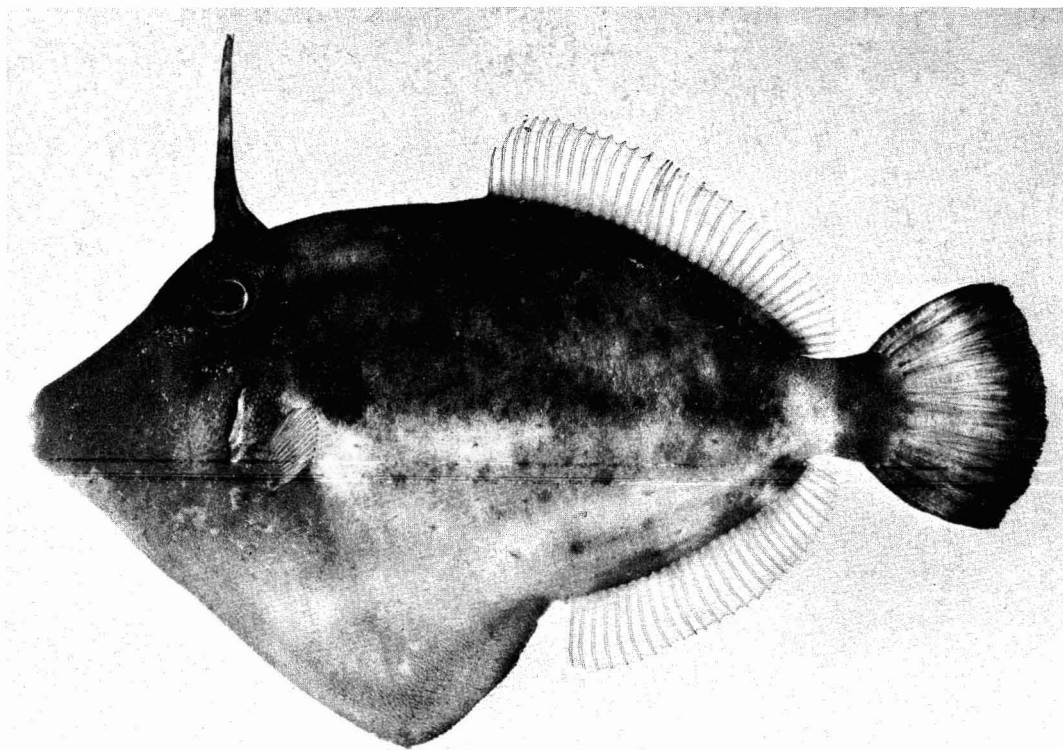


FIGURE 2. *Cantherhines fronticinctus*; 172 mm SL; BPBM 22111; Cebu, Philippine Islands.

blotch below eye; the blue markings on cheek and pelvic flap may be absent; the anterior dark cross band on the caudal fin may be prominent or indistinct.

Preserved specimens are grayish brown to brown, many of the markings mentioned above still visible. The interorbital bands are particularly distinct.

**REMARKS:** *Cantherhines fronticinctus* is found throughout the tropical and subtropical Indian Ocean and in the western Pacific as far north as the Ryukyu Islands. It has been reported from East Africa (Durban to Zanzibar), Seychelles, Indonesia, and the Philippines. Matsuura (1981) has extended the range to Honshu, Japan. We record it here for the first time from Réunion, Mauritius (sight record and underwater photograph by the junior author), Western Australia (Shark Bay to North West Cape), New Guinea, and the

Ryukyu Islands. It is not a common species. Smith (1949) stated that it lives mainly in shallow water among weeds. We have found it most often on reefs. It has been taken by spear, rotenone, and gill nets in depths ranging from the intertidal to 43 m.

Playfair and Günther (1867) described *Monacanthus fronticinctus* from two skins collected at Zanzibar off the east coast of Africa. It was subsequently reported by Günther (1870:231) that these skins represented two species. He designated the skin from which the illustration accompanying the type description was made as "type." The second skin was relegated (p. 240) to the synonymy of *Monacanthus setifer* Bennett (= *Stephanolepis setifer*), an Atlantic Ocean species. Unfortunately, the designated holotype (BM(NH) 1867.3.9.436) cannot now be found, and appears to have been lost (A. C. Wheeler, personal communication). Nevertheless, there

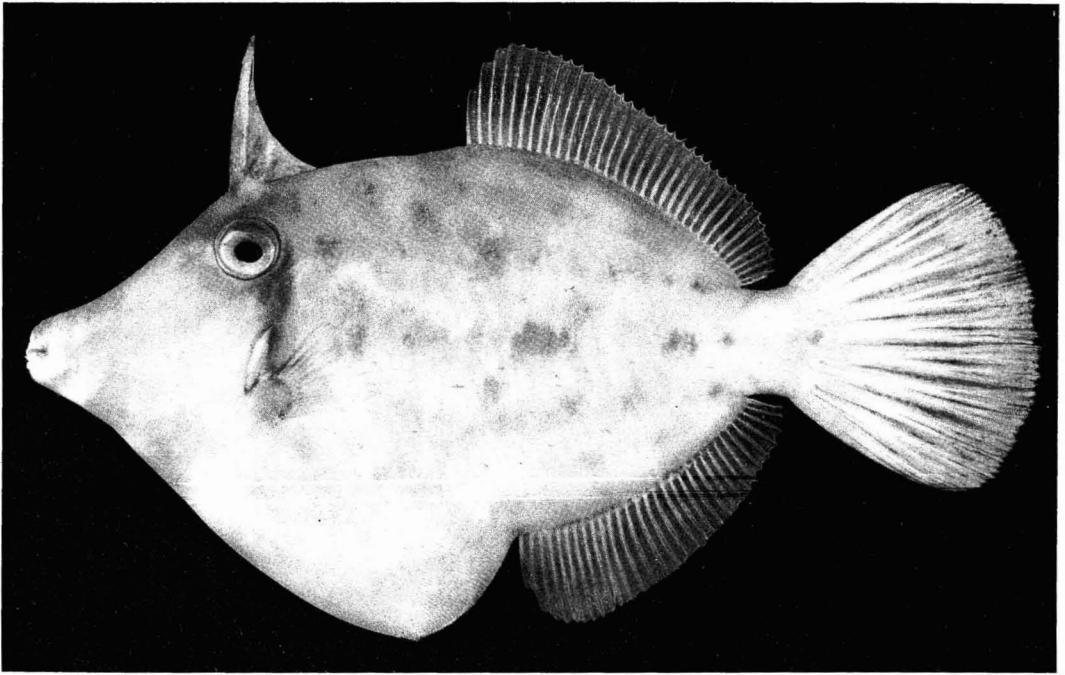


FIGURE 3. Holotype of *Cantherhines longicaudus*; 106 mm SL; BPBM 7197; Tahiti, Society Islands.

is no doubt in our minds that the species here described as *Cantherhines fronticinctus* is conspecific with Günther's first skin. The second skin (BM(NH) 1867.3.9.435) is extant, and on the basis of a photograph is considered to be *Stephanolepis ocheticus* Fraser-Brunner, a species presently known from the eastern Mediterranean, through the Suez Gulf to the Red Sea.

**MATERIAL EXAMINED:** 13 specimens, 49–187 mm SL: RUSI 5081, 103 mm SL, Machangulo, Delagoa Bay, Mozambique, J. L. B. Smith et al., 25 August 1949; RUSI 5082, 92.3 mm SL, no data; BPBM 20051, 93 mm SL, Réunion, P. Guézé, 20–21 October 1973; BPBM 19133, 105 mm SL, Sesoko Island, Okinawa, Ryukyu Islands, J. E. Randall, 31 May 1975; WAM P.25541-001, 2 specimens: 101–187 mm SL, off Tantabiddi Creek, North West Cape, Western Australia, G. R. Allen, 18 May 1976; WAM P.25586-001, 177 mm SL, North West Cape, J. Braun, 21 July 1976; BPBM 21574, 183 mm SL, Ave Maria Rocks, La Digue, Seychelles, J. E. Randall, 29 May

1977; WAM P.25825-001, 96 mm SL, South Muiron Island, North West Cape, J. B. Hutchins, 12 June 1977; BPBM 22111, 172 mm SL, Solpa Island, Cebu, Philippines, J. E. Randall, 24 August 1977; BPBM 22322, 77 mm SL, Sesoko Island, Okinawa, J. E. Randall, T. Yoshino, and Y. Yasumoto, 14 September 1977; USNM 222196, 49 mm SL, Lolorua Island, Port Moresby, Papua New Guinea, B. B. Collette, 10 June 1979.

#### *Cantherhines longicaudus*, new species

##### Figure 3

**HOLOTYPE:** BPBM 7197, 106 mm SL, female, Popote Bay, Papara, Tahiti, Society Islands, 18 m, spear, J. E. Randall, 7 March 1969.

**PARATYPE:** USNM 223717, 132 mm SL, female, Rarotonga, Cook Islands, near harbor entrance, 21 m, spear, J. E. Randall, 12 March 1971.

**DIAGNOSIS:** A species of *Cantherhines*, as redefined by Hutchins (1977), on the basis of



the prominent groove in the back for receiving the depressed first dorsal spine, the nonmobile pelvic fin rudiment consisting of three pairs of incasing scales, 19 vertebrae, and the absence of spines or bristles on the midside of the body. Within the genus it is separable by the long caudal fin (length 0.9–1.1 in head length, all others 1.1 and above) and overall dull-yellow ground color.

**DESCRIPTION:** Dorsal fin rays II,35 (36); anal fin rays 31 (33); pectoral fin rays 12 (uppermost rudimentary ray not included); caudal fin rays 12; gill rakers of holotype 30; vertebrae 7 + 12.

Body moderately deep, the depth 2.0 (2.0) in SL, and compressed, the width 3.6 (4.1) in depth; head acute, the upper and lower profiles prominently concave anteriorly; head length 3.0 (3.1) in SL; snout length 3.7 (3.8) in SL; orbit diameter 3.8 (3.8) in head length; interorbital width 3.8 (4.2) in head; gill slit centered below eye, its length 3.7 (3.5) in head length; pelvis capable of moving vertically through an arc of about 25°, producing a moderate ventral flap; caudal peduncle not deep, its length 1.5 (2.1) in depth of peduncle.

Mouth small, terminal; lips somewhat fleshy; dentition normal, the upper jaw with 3 outer and 2 inner teeth on each side, the extremities of inner teeth projecting between outer ones; lower jaw with 3 teeth on each side; all external teeth in jaws except posteriormost pointed.

First dorsal spine moderately strong, its length 1.6 (1.7) in head length, originating over anterior half of eye, folding into a moderately deep groove in back when depressed (dorsal spine deformed in paratype); a series of small posteriorly directed barbs along each posterolateral edge of first dorsal spine and two series of almost indistinguishable barbs on anterior face; soft dorsal and anal fins about equal in height, longest soft dorsal ray (fifth to eighth) 2.2 (1.6) in head length; length of soft dorsal fin base 2.4 (2.5) in SL, somewhat longer than base of anal fin (bases of fin membranes not perforated); interdorsal space flat to prominently elevated (latter condition rarely occurs in females of species which normally possess flat interdorsal spaces), its

length 1.2 (1.2) in head length; base of pectoral fin below center to posterior half of eye; caudal fin long, its length 3.1 (2.9) in SL, the posterior border rounded; all fin rays except median 10 of caudal unbranched; pelvic fin rudiment small, length 5.4 (6.1) in orbit diameter, consisting of three pairs of incasing scales armed with minute barbs and immovably fused to posterior end of pelvis.

Scales on head and body minute, each with one to many short slender spinules, giving skin a velvety to slightly coarse texture; mid-body scales usually with one to two transverse rows of slightly recurved spinules; caudal peduncle unarmed (male condition not known).

Color of holotype in preservative (55 percent isopropanol): head and body pale brown; a dark-brown band extending from ventro-posterior border of orbit to upper pectoral base, decreasing in width ventrally; two faint bands cross interorbital space, a wide anterior one joining anterior borders of orbits, and a narrow posterior one at origin of first dorsal spine; five faint large, dark blotches on ventral region, the first on chin and last just anterior to rear of pelvis; a rather prominent dark blotch about equal to eye diameter on midside of body below fifth to ninth soft dorsal rays; anterior to this a very faint dark blotch at tip of pectoral fin; three small dark blotches posteriorly on midline of side, the last just anterior to center of caudal fin base; indications of four rows of faint dark blotches and spots on sides, two above and two below midline of side, following dorsal and ventral contours of body, respectively; three very faint dark saddles on base of both soft dorsal and anal fins; two faint dark saddles on interdorsal space; soft dorsal, anal, and pectoral fin membranes hyaline, rays pale brown; spinous dorsal fin membrane brown; caudal fin rays pale brown with two dark curved cross bars, the anterior one very faint, the membranes becoming browner posteriorly.

The paratype has a similar coloration except the ground color is brownish gray and the markings on head, body, and caudal fin are generally darker.

Color of holotype when fresh (based on a color transparency): head and body dull yellow, the markings as described above

TABLE 2

PROPORTIONAL MEASUREMENTS OF TYPE SPECIMENS  
OF *Cantherhines longicaudus* (EXPRESSED AS A  
PERCENTAGE OF STANDARD LENGTH)

	HOLOTYPE, BPBM 7197	PARATYPE, USNM 223717
Standard length (mm)	106.0	132.0
Depth of body	51.0	49.2
Width of body	14.2	12.1
Head Length	33.0	31.8
Snout length	27.3	26.5
Orbit diameter	8.6	8.3
Interorbital width	8.6	7.6
Gill slit length	8.9	9.1
Depth of caudal peduncle	13.2	11.4
Length of caudal peduncle	6.2	7.6
Snout to dorsal spine	33.0	32.5
Snout to pelvic fin rudiment	64.1	59.1
Dorsal spine length	20.7	18.9
Interdorsal length	28.4	26.5
Longest dorsal ray	15.1	19.7
Length of dorsal fin base	41.5	39.4
Longest anal ray	19.8	15.9
Length of anal fin base	35.8	33.4
Caudal fin length	32.0	34.0
Longest pectoral ray	13.3	12.1
Length of pelvic fin rudiment	1.6	1.3

brownish; dorsal and anal rays dull yellow, the membranes translucent yellowish, the distal margin narrowly yellow; caudal fin rays dull yellow, the membranes brownish yellow.

REMARKS: This species is named *longicaudus* from the Latin *longus* meaning "long" and *cauda* meaning "tail," in reference to its long caudal fin.

*Cantherhines longicaudus* is known only from Tahiti and Rarotonga in southern Oceania. However, two small specimens in the Australian Museum from Lord Howe Island may possibly be this species. Because of their size and old age, positive identification is not possible. These two specimens are: AMS I.4095, 41 mm SL, collected by E. R. Waite et al. in 1898 and AMS I.13896, 37 mm SL, collected by P. R. Pedley in 1916.

*Cantherhines longicaudus* is closely related to both *C. verecundus* and *C. rapanui*, differing in its longer caudal fin and ground color when fresh (dull yellow as against gray to olive brown for *C. verecundus* and olivaceous to

brown or yellowish brown for *C. rapanui*). These three species are allopatric, and some authors might prefer to regard them as subspecies.

### *Cantherhines verecundus* Jordan

#### Figure 4

*Cantherhines verecundus* E. K. Jordan, 1925, p. 40, pl. 2, fig. 3 (type locality, Oahu, Hawaiian Islands).

DIAGNOSIS: A species of *Cantherhines* separable from all other monacanthids by the following combination of characters: soft dorsal fin rays 33–36; anal fin rays 30–32; pectoral fin rays 12 or 13 (usually 13); vertebrae 7 + 12; head length 2.8–2.95 in SL; snout length 3.25–3.55 in SL; first dorsal spine of medium length, 1.5–1.7 in head length, originating over anterior half of eye and folding into a moderately deep groove in back when depressed; dorsal spine covered by many longitudinal rows of minute asperities, with two rows of somewhat enlarged barbs on anterior face and one on each posterolateral edge (number of rows and relative sizes of asperities and barbs, respectively, increase and decrease with increasing SL); second dorsal and anal fins not obviously elevated anteriorly, about equal in height; longest soft dorsal ray (sixth to ninth) 2.0–2.3 in head length; caudal fin relatively long, its length 3.1–3.9 in SL, the posterior border rounded; pelvic fin rudiment very small, its length 3.4–4.3 in orbit diameter, consisting of three pairs of incising scales fused to posterior end of pelvis; scales on body very small, each with rows of minute slender spinules giving the skin a velvety texture; caudal peduncle never armed with spines or patch of bristles; head relatively acute, especially in females.

Color in preservative: ground color varying from gray to light brown; a prominent dark bar from ventroposterior border of eye to upper pectoral fin base; usually crossing upper portion of gill opening, sometimes continuing beneath pectoral fin; two faint dark bands crossing interorbital, the anterior one wide, joining anterior borders of eyes, and the posterior one at origin of first dorsal spine nar-

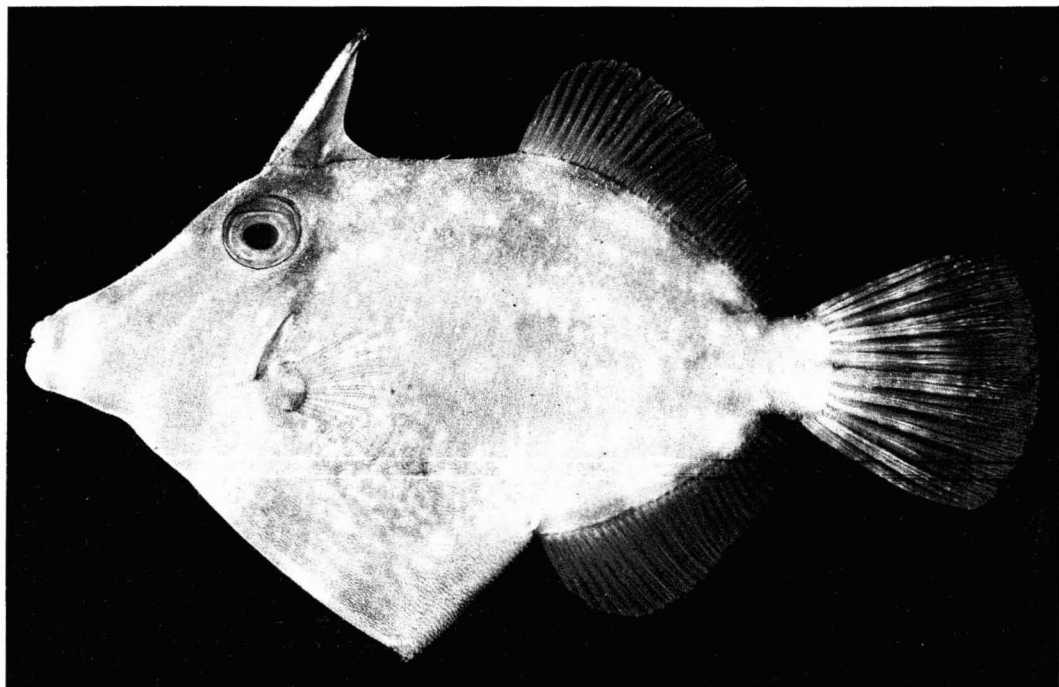


FIGURE 4. *Cantherhines verecundus*; 71 mm SL; BPBM 7316; Oahu, Hawaiian Islands.

row; five faint large, dark blotches on ventral region, the first on chin and the last just anterior to rear of pelvis; a row of four dark blotches on midside of body, the first fainter than the others, located near tip of pectoral fin; second blotch prominent, about orbit diameter in size, below fourth to ninth soft dorsal fin rays; third blotch below posterior rays of soft dorsal fin; fourth blotch small, centered on caudal fin base (occasionally a fifth located between third and fourth blotches); indications of four additional rows of faint spots and blotches, two above and two below mid-lateral line, following dorsal and ventral contours of body, respectively (all five rows may rarely be represented by dark stripes); usually three dark saddles on both soft dorsal and anal fin bases, the posteriormost darkest; two saddles occasionally seen on interdorsal space and another on center of snout; first dorsal spine sometimes with two or three dark cross bands; soft fins unmarked except for caudal, which usually possesses two curved dark cross bars.

There is relatively little difference in the coloration when fresh other than the ground color being more gray and the presence of numerous small poorly defined whitish spots on the head and body.

**REMARKS:** *Cantherhines verecundus* is known only from the Hawaiian Islands. It is notably less common than the other endemic species of the genus in Hawaii, *C. sandwichiensis* (Quoy and Gaimard), at least in relatively shallow water. Specimens of *C. verecundus* have been collected from the depth range of 14–92 m by use of rotenone, trawls, spears, and traps.

The holotype of *Cantherhines verecundus* (USNM 87420, 99 mm SL) is in the U.S. National Museum of Natural History, Washington, D.C.

This species is the smallest of the *fronticinctus* complex. The largest of 36 specimens seen by us measures 114 mm SL. Randall (1964), from communication with W. A. Gosline, gave a maximum standard length of 128 mm.



However, examination of Gosline's material at the University of Hawaii reveals the largest as 106.5 mm SL. We believe that the 128 mm length was actually total length; Gosline and Brock (1960) recorded their largest specimen of *verecundus* (as *Amanes pardalis*) as 5 in. total length (= 127 mm).

*Cantherhines verecundus* is very closely related to *C. rapanui* of Easter Island, differing in its smaller size, longer first dorsal spine, lower average number of dorsal and anal rays, usually 13 instead of 12 pectoral rays, and a ground color which is more gray than brown or olivaceous.

The stomach contents of five specimens, 88–94 mm SL, taken from the depth range of 21–27.5 m consisted of several species of sponges (59.6 percent by volume), benthic algae (19.2 percent), tunicates (6.2 percent), bryozoans (3.4 percent), foraminifera (2.8 percent), ophiuroids (1.1 percent), plus small amounts of polychaete worms, pelecypods, small crustaceans, and unidentified eggs. Approximately 5 percent of the stomach contents was inorganic detritus and unidentified organic material. Another three fish, 78–85 mm SL, taken by trawling in 64 m, had eaten benthic algae (*Dictyosphaeria*, *Amasia glomerata*, a brown of the Dictyotales, and traces of *Halimeda* and *Lyngbya*) exclusively, except for a few branches of a bryozoan.

**MATERIAL EXAMINED** (all Hawaiian Islands): 22 specimens, 70–106.5 mm SL: BPBM 26445, 2 specimens: 103–109 mm SL, Honolulu, J. W. Thompson, no date of collection (but between 1901 and 1925); WAM P.26920-001, 97 mm SL, Hawaiian Islands, 1923; BPBM 5048, 106 mm SL, Honolulu fish market, J. C. Ball, 21 January 1926; BPBM 25436, 2 specimens: 73–82 mm SL, French Frigate Shoals, National Marine Fisheries Service, 13 August 1948; UH 227, 106.5 mm SL, Oahu, T. Otsu, 1 December 1948; UH 2483, 98 mm SL, Port Allen, Kauai, *Miss Honolulu*, 12 September 1959; BPBM 7316, 2 specimens: 70–71 mm SL, Lahilahi Point, Oahu, J. E. Randall et al., 10 August 1968; BPBM 7969, 2 specimens: 90–96 mm SL, channel entrance off northeast Kaneohe Bay, Oahu, J. E. Randall, E. Chave, and W. Hashimoto, 10 October 1969; UH

73-138, 4 specimens: 67–82 mm SL, Makua, Oahu, L. Taylor, 14 September 1973; BPBM 24920, 3 specimens: 78–85 mm SL, Middle Bank, Leeward Islands (22°44' N, 161°04' W), *Townsend Cromwell*, Cruise 67, station 4, 24 October 1975; WAM P.26919-001, 74 mm SL, Leeward Islands (24°23' N, 167°07' W), *Townsend Cromwell*, Cruise 67, station 49, P. Struhsaker, 1 November 1975; BPBM 21053, 2 specimens: 93–94 mm SL, off Laysan Island, Leeward Islands, *Townsend Cromwell*, Cruise 77-02, D. Davis, 17 June 1977.

#### *Cantherhines rapanui* De Buen

##### Figure 5

*Amanes rapanui* De Buen, 1963, p. 66, fig. 32 (type locality, Easter Island).

*Cantherhines tiki* Randall, 1964, p. 350, fig. 12 (type locality, Easter Island).

**DIAGNOSIS:** A species of *Cantherhines* separable from all other monacanthids by the following combination of characters: soft dorsal fin rays 35–37; anal fin rays 31–34; pectoral fin rays 11–13 (usually 12); gill rakers 34–41; vertebrae 7 + 12; head length 2.85–3.15 in SL; snout length 3.5–3.7 in SL; first dorsal spine short, 1.8–2.3 in head length, originating over anterior half of eye and folding into a moderately deep groove in back when depressed; dorsal spine covered by many longitudinal rows of minute asperities, with two rows of somewhat enlarged barbs on anterior surface and one on each posterolateral surface; second dorsal and anal fins not strongly elevated anteriorly, about equal in height; longest soft dorsal ray (sixth to eighth) 2.1–2.6 in head length; caudal fin relatively long, 3.3–4.3 in SL, the posterior border rounded; pelvic fin rudiment very small, its length 3.9–6.0 in orbit diameter, consisting of three pairs of incasing scales fused to posterior end of pelvis; scales on body very small, each with rows of minute slender spinules giving the skin a velvety texture; caudal peduncle never armed with spines or patch of bristles; head relatively acute, especially in females.

Color in preservative much like that of *Cantherhines verecundus*. When fresh, the ground color is olivaceous to brown or yel-

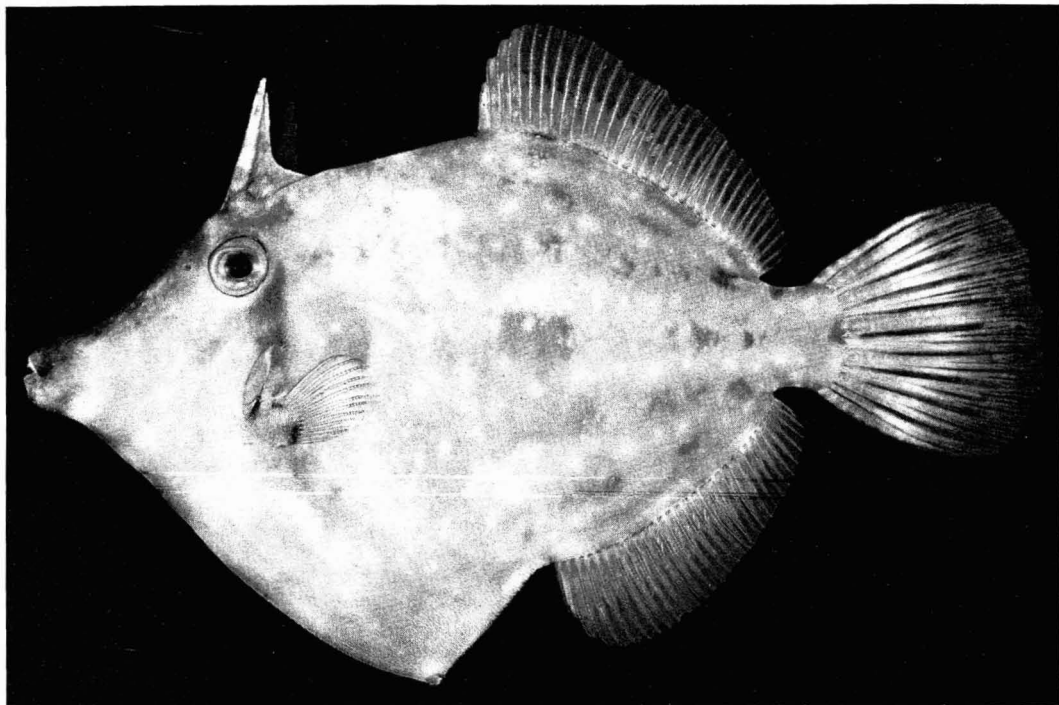


FIGURE 5. *Cantherhines rapanui*; 130 mm SL; BPBM 6789; Easter Island.

lowish brown, whereas *verecundus* is more gray. As in *verecundus*, there may be poorly defined pale spots.

**REMARKS:** This species is known only from Easter Island, where it occurs in shallow water. Specimens we have examined have been taken in the depth range of 0.5–8 m.

*Cantherhines rapanui* was described by De Buen (1963) from six specimens ranging from 164 to 196 mm in total length (hence, about 127–152 mm SL). One fish speared from 4 m was described by him as light green with a blue band behind the gill opening. The junior author collected fishes at Easter Island for a month in early 1969. Four adult specimens of *C. rapanui* were obtained and many more observed underwater, but none exhibited the color pattern described by De Buen. Possibly, he observed male breeding coloration.

Before De Buen's paper on Easter Island fishes became generally known, Randall (1964) described the species a second time as

*Cantherhines tiki* from a single specimen first reported as *Monacanthus cirrhifer* by Kendall and Radcliffe (1912). As an addendum in footnote form, Randall designated five additional specimens from the Natural History Museum of Los Angeles County as paratypes. Caldwell and Randall (1967) placed *C. tiki* in the synonymy of *C. rapanui*. They added descriptive data from eight more specimens from the Institute of Fisheries, University of British Columbia, which had been collected at Easter Island in 1965. They also reported that the stomach contents of these eight fishes consisted mostly of benthic algae, along with sponge and detritus, although one fish had eaten more sponge than algae.

As mentioned in the remarks under *Cantherhines verecundus*, *C. rapanui* is closely related to this species. When Randall first described *C. tiki*, he noted its close relationship to *C. verecundus* and *C. fronticinctus*. *Cantherhines tiki* was separated based principally on its short first dorsal spine, strongly pro-

duced snout, and short pelvic fin rudiment (which Randall termed *pelvic terminus*). However, Caldwell and Randall pointed out that there is considerable variation in the degree to which the snout is produced, the holotype of *tiki* being among those with the most protruding snout. Because of this variation, the shape of the snout has no diagnostic value. The snout of *verecundus* is actually longer on the average than that of *rapanui*. The numbers of dorsal, anal, and pectoral fin rays (see Table 1) show clear differences, but again there is overlap. However, the short first dorsal spine of *rapanui* continues to provide complete separation from *verecundus*. It should be pointed out that we do not have comparable specimens of the two species; our largest *verecundus* is 106.5 mm SL whereas our smallest *rapanui* measures 126 mm SL.

**MATERIAL EXAMINED:** 18 specimens, 126–160.5 mm SL: USNM 65578, holotype of *C. tiki*, 133.5 mm SL, Cook Bay, Easter Island, *Albatross* Expedition, 21 December 1904; LACM 3217, 5 specimens: 146–160.5 mm SL, Anakena Cove, Easter Island, Ramsey Parks and crew of ketch *Chiriqui*, 1 January 1958; BC 65-433, 434, 437, 440, and 447, 8 specimens: 126–147 mm SL, Easter Island, I. E. Efford and J. A. Mathias, January 1965; BPBM 6790, 142 mm SL, wreck between Hanga Roa and Hanga Pico, Easter Island, 4 m, J. E. Randall, 27 January 1969; BPBM 6789, 131 mm SL, Mataverí O Tai, Easter Island, J. E. Randall and G. R. Allen, 2 February 1969; WAM P.27045-001, 129.5 mm, same data as preceding; BPBM 6791, 137 mm SL, Ana Kai Tangata, west coast of Easter Island, J. E. Randall, 4 February 1969.

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